



Sailing in Gusts

A gust is a rapid increase in the wind speed relative to the average strength at the time, and tends to be short-lived. Gusts are the result of turbulent air flow caused by:

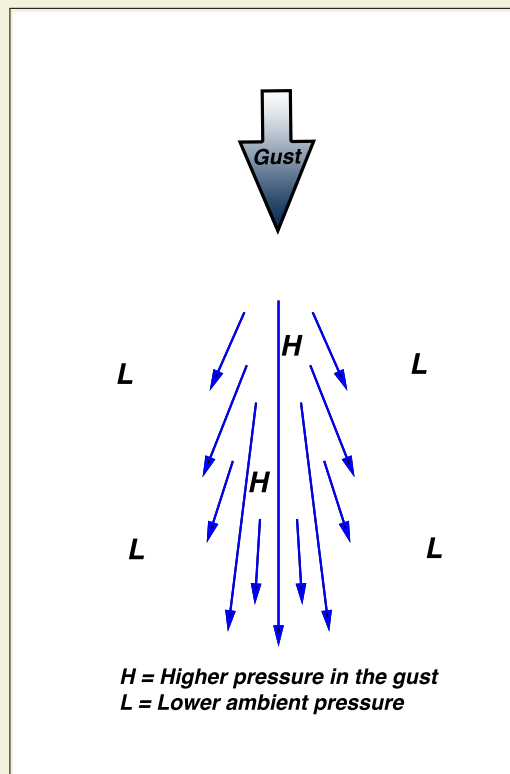
- Air moving over or around physical obstructions like hills, buildings or trees.
- Vertical air movements associated with certain cloud formations or thermals.
- Converging weather patterns, or fronts.

When you check the weather forecast before going sailing, check not just the wind strength, but also look for the expected strength of the gusts. A nominal breeze of 10kts sounds like an A rig day for a DF95, but if it's gusting 22kts, there will be times when you find yourself well overpowered.

Spotting the Gusts

The easiest way to spot a gust is to watch for changes of light reflected off the water. Gusts tend to create small ripples on the surface and will show up as either dark patches on the water, or as patches of glitter depending on how the light reflects off the ripples.

As you watch the pattern of light or dark move down the course, you will often see it changing shape and fanning out.



Gust fanning out

The gust fans out because it is an area of higher

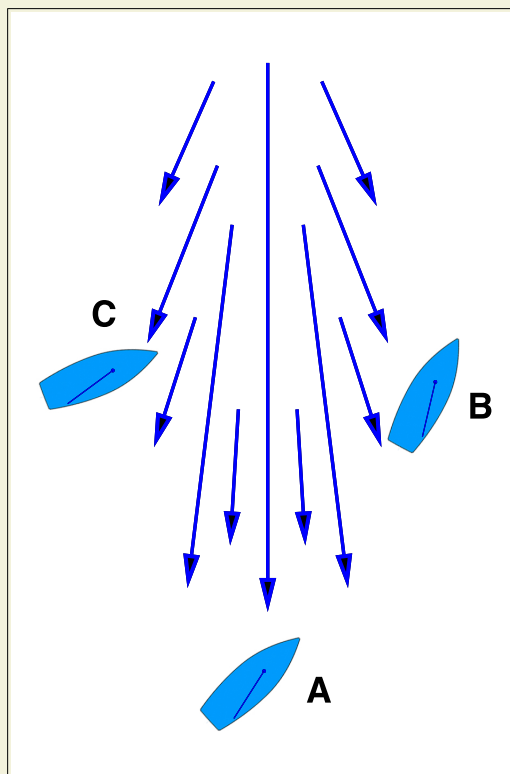
pressure surrounded by lower ambient pressure. The higher pressure air tends to move towards the low pressure space. As it fans out, the gust changes the wind direction at it's edges. This process continues as the gust moves down the course until it's energy dissipates.

Beating in Gusts

If you are overpowered by the higher pressure in the gust, a good technique is to slightly ease sheets and free off for increased speed. You may not be pointing as high, but your increased speed will help restore some of the lost VMG. As the gust eases, sheet in and point high again.

Look at the effect of the gust on the three boats beating to windward in the diagram below:

- A will get higher pressure, but no change in wind direction. She should ease sheets a little and sail for speed.
- B will get higher pressure and be lifted. She should continue on port tack and keep an eye out for the next gust.
- C will get higher pressure and be headed. She should tack and sail up the left hand side of the gust.



Sailing in gusts

So head for the gust, and when you get there (or it gets to you!), make sure you are on the lifted tack with the gust passing close by your windward side. If you need to tack to get into position, do it before the gust hits while you have more control.

Running in Gusts

For a few techniques that will give you a speed edge over the opposition downwind, check out the Leeward Mark

Rounding document under the section *Sailing Faster Downwind*. The techniques explained there work well up to the point where the gusts start to overpower the boat at which time you need to switch to survival mode.

Running in gusts at the top end of your rig's wind range can be a bit tricky. When overpowered downwind, the DF classes will nosedive and once the rudder comes out of the water, all control is lost. This is particularly the case for the DF65 with its high aspect ratio rig and deep keel – the rotational force between the high CE and the low CLR will quickly trip the boat up and bury the hull. The boat will pop up again, but you have almost zero control over which way it will be facing and the result is often that it gets buried again.

In the DF95, the rotational forces are reduced and the hull is longer, giving the DF95 a better chance of survival in marginal conditions downwind.

There are four survival strategies that can delay the point where you lose control:

- It is sometimes possible to see the gust advancing downwind and either sail away from it, or get out to the edges where some of the energy in the gust has dissipated.
- Sail by the lee. Let the sheets right out and bear away to bring the wind direction just to leeward of dead astern (not so far to leeward that main flicks over). The jib will flap and the boat will heel to windward. This is ok as it brings the CE in over the centreline and counteracts any tendency for the boat to broach in the gust. When the gust eases, steer back to a square run and trim in the sheet to bring the boat upright. This technique works well when the strength of the gust is just at the point of tripping up the boat.
- Before being hit by a really big gust, sail on a beam reach. The boat will be completely flattened and you may be sailing away from the direction you wish to go, but control will be regained as soon as the gust passes and you will probably get to the leeward mark more quickly than boats that have been buried.
- Change to a smaller rig. This one always works.